

A New Species of the Flea Beetle Genus *Chaetocnema* Found on *Dichondra* in California

(Coleoptera: Chrysomelidae)

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A new species of flea beetle that is doing millions of dollars damage to dichondra lawns in Los Angeles County is described and the biology recorded.

Important research on *Chaetocnema* by Duckett (1920) in Maryland began in 1911 and ended with his death in 1918. Gentner (1928) described three new species including *Chaetocnema magnipunctata*, which was found in California. Poos (1955) worked on the biology of *Chaetocnema pulicaria*, *C. denticulata*, and *C. confinis* from 1934–1936. This work was of considerable help to me in my research.

Because of the economic importance, the flea beetle will merit further observation and study.

MATERIALS AND METHODS

Study of the life cycle involved rearing these life stages by a method that most nearly simulated its usual habitat. These beetles were reared on full flats of dichondra grown from seed placed in a steam treated media. The dichondra was planted four months before the start of the test. Three to four hundred beetles were introduced into a rearing cage capable of holding a full flat of dichondra. Samples measuring about two inches wide and six inches long were cut from the flat of dichondra and put in Berlese funnels daily until the first larvae appeared. Samples were then taken every third day and the results documented.

Eggs and pupae were reared on dichondra leaves, stems, and roots in clear plastic cages kept moist with dampened blotters. A pinch of sterilized soil was added for moisture control when rearing pupae.

KEY TO THE CHAETOCNEMA OF CALIFORNIA

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| 1. Sides of prothorax regularly arcuate from base to apex, without oblique truncations at front angles | 2 |
| Sides of prothorax obliquely truncate at front angles, with post apical angulation | 8 |
| 2. Vertex always punctate sometimes indistinctly | 3 |
| Vertex absolutely impunctate except near eyes | 5 |

3. Rows of elytral punctures confused at bases; length 2.0 mm *irregularis* Leconte
 Rows of elytral punctures regular 4
4. Punctures of head distinct; length 2.3–2.5 mm *denticulata* (Illiger)
 Punctures of head indistinct; length 1.5 mm *opacula* Leconte
5. Basal marginal line of prothorax entire, not defined by punctures 6
 Basal marginal line of prothorax defined by row of punctures, sometimes
 continued to middle as a line 7
6. Prothorax alutaceous, with median smooth space posteriorly; scutellar
 stria usually confused; color greenish bronze; tibia in part and tarsi reddish
 black; length 2.0–3.5 mm *subviridus* Leconte
 Prothorax not distinctly alutaceous, without smooth space; scutellar stria
 regular; color golden bronze; tibia and tarsi brownish yellow; length 2.0–
 2.5 mm *opulenta* Horn
7. Prothorax indistinctly punctate; alutaceous, basal punctures fine and close;
 humeri rounded, black bronzed color, antennae reddish yellow at base, five
 outer segments reddish black; length 1.5 mm *ectypa* Horn
 Prothorax with large, round deep punctures, surface faintly alutaceous;
 humeri obtuse, elytra a little wider at base than prothorax and broadly
 rounded to apex; brassy bronze with slight greenish tinge; basal four seg-
 ments of antennae, tibia and tarsi more or less reddish yellow; length 1.75–
 1.95 mm *magnipunctata* Gentner
8. Head impunctate or with one puncture over eyes, prothorax nearly impunc-
 tate; length 1.5–1.8 mm *confinis* Crotch
 Head with few distinct punctures over eyes, prothorax distinctly punctate;
 length 1.5–1.8 mm *repens* McCrea, n. sp.

***Chaetocnema repens* McCrea, new species**

Chaetocnema magnipunctata, Jefferson, et al., 1967:9 (*nec* Gentner).

MALE.—Length 1.5 mm, width 0.9 mm. Broadly oval, robust, reddish black and slightly bronzed. Antennae reddish yellow. Anterior and middle legs and posterior tibiae and tarsi reddish yellow, posterior femora slightly reddish black. Head finely alutaceous, distinct punctures over eyes. Prothorax anterior angles obliquely truncate, post apical angulation distinct and arcuate posterolaterally, disc distinctly alutaceous without basal marginal line, punctures of moderate size, closely but not densely placed, not deeply impressed, dorsum of prothorax distinctly punctate. Humeri rounded, umbone moderate, striae impressed on disc, more deeply at sides, punctures relatively coarse, close and deep, but not serrate, intervals slightly convex, wider than striae on disc, but not at sides, surface smooth, shining, with fine interestrial punctures. Body beneath light reddish black, shining. Prosternum punctate, side pieces smooth. Abdomen sparsely indistinctly punctate. Aedeagus with smooth slope to apex when viewed laterally.

FEMALE.—Very similar to male. Length 1.7 mm. Width 1.1 mm. Genitalia lobes have smooth slope to base when viewed dorsally.

Holotype male and allotype, WHITTIER, LOS ANGELES COUNTY, CALIFORNIA, 1 September 1970, R. J. McCrea, deposited in Entomological Collection LACM. Paratypes including ten males and ten females, ex-

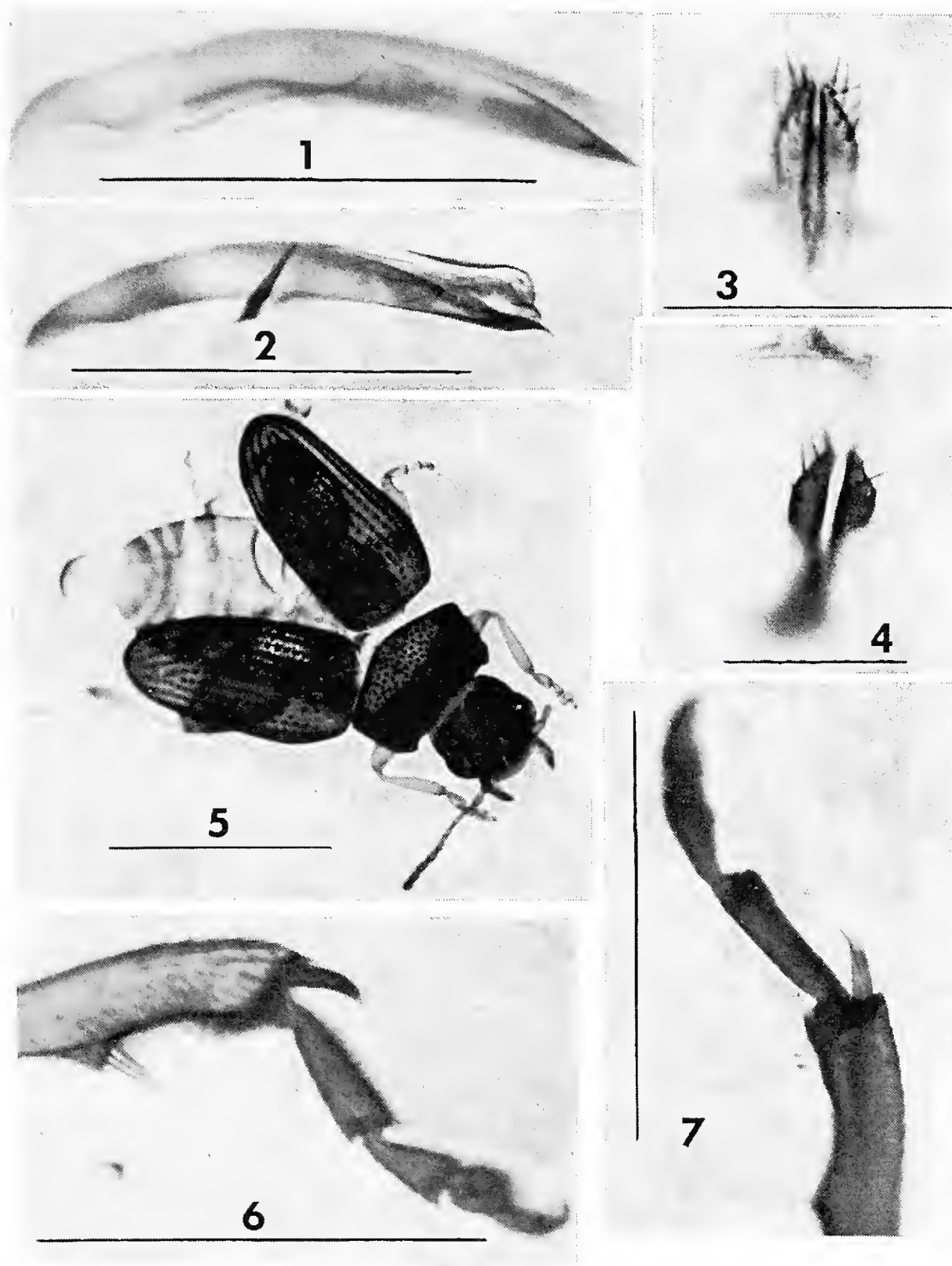


FIG. 1. Aedeagus of *Chaetocnema repens*, side view. FIG. 2. Aedeagus of *C. confinis*, side view. FIG. 3. Female genitalia of *C. repens*. FIG. 4. Female genitalia of *C. confinis* (line represents 0.25 mm). FIG. 5. Slide specimen of adult *C. repens* (line represents 1 mm). FIG. 6. End of hind tibia of *C. repens*. FIG. 7. End of hind tibia of *C. confinis*. Lines on Figs. 1-3, 6, 7 represent 0.5 mm.

amples all same data as holotype. Length 1.5–1.8 mm. Width 0.8–1.1 mm. Paratypes are placed in following collections: Los Angeles County Museum; California State University, Long Beach; Los Angeles County Agriculture Commissioner's Office, Los Angeles; and California Department of Agriculture, Sacramento.

This new species, which is very similar to *Chaetocnema confinis*, can be distinguished from it by two or three distinct punctures over the eyes and distinct punctures on the prothorax (Fig. 9) as compared to one or no punctures over the eyes and indistinct punctures on the prothorax (Fig. 10); the aedeagus having a smooth slope to the apex (Fig. 1) as compared to a depression near the apex of the aedeagus in *C. confinis* when viewed laterally (Fig. 2); dorsal view of the aedeagus also differs from *C. confinis* by not having a slight indentation near the base (Fig. 8) as compared to the indentation of *C. confinis* (Fig. 11); female genitalia differ by the genitalic lobes not having sharp angles at the base (Fig. 3) as compared to the genitalic lobes of *C. confinis* (Fig. 4); inner margin of the hind tibia is thicker in *C. repens* (Fig. 6) than the hind tibia of *C. confinis* (Fig. 7).

C. confinis and *C. repens* (Fig. 5) have the sides of the prothorax obliquely truncate at the front angles, with post apical angulations, which separates these two species from other *Chaetocnema* in California.

Chaetocnema repens occurs in Los Angeles County and in other southern counties. Recently the State Department of Agriculture submitted samples to me from Sacramento which proved to be *C. repens*. I am certain that when a complete distribution of this flea beetle is determined, the area will include much of California where dichondra is grown. Available information was taken from state and county records but *Chaetocnema* specimens were usually identified only to genus.

LIFE CYCLE

Eggs hatch three days after deposition. Eggs are deposited in dichondra sod near the surface. Eggs were deposited in clear plastic cages in the laboratory test on dichondra roots, stems, cut dichondra leaves and even on damp blotters. These eggs were measured by their width and length in microns. The range of width was 225–275 microns averaging 252 microns. The range of the length was 450–500 microns averaging 480 microns.

The larval stage takes 22 to 25 days to pupation. There are four instars as was determined by measurement of the head capsules of larvae. First instar head capsules measured 115–125 microns wide and

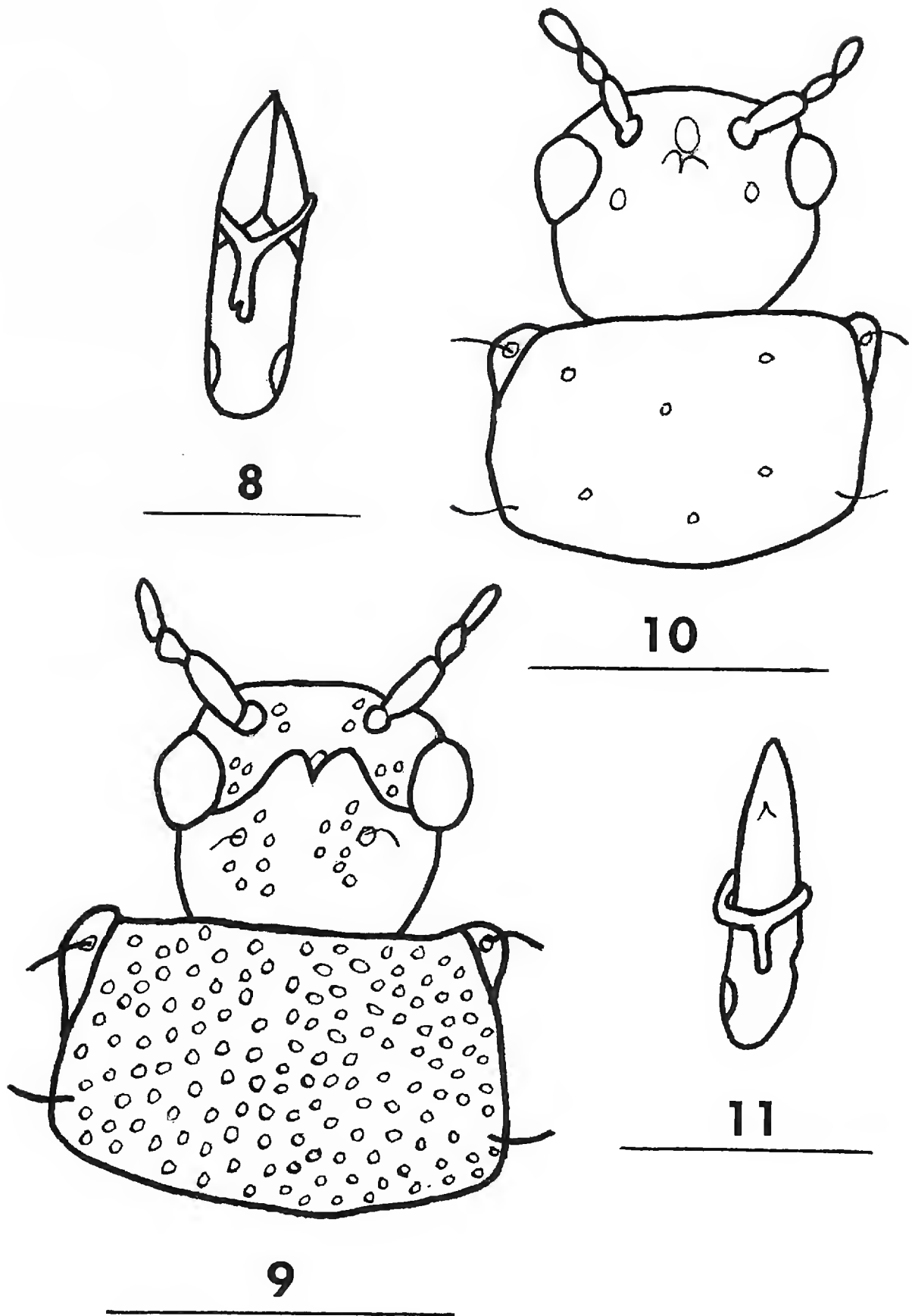


FIG. 8. Illustration of the aedeagus of *Chaetocnema repens*, dorsal view. FIG. 9. Illustration of the pronotum and part of head capsule of *C. repens*, dorsal view. FIG. 10. Illustration of the pronotum and part of head capsule of *C. confinis*, dorsal view. FIG. 11. Illustration of the aedeagus of *C. confinis*, dorsal view. Solid black line below Figs. 8-11 represents 0.5 mm.

125 microns long. Second instar head capsules were 137–150 microns in width and length. Third instar head capsules measured 187–200 microns wide and 200–212 microns long. Fourth instar head capsules measured 237–265 microns in width and length. The larval stage begins to eat dichondra roots soon after hatching. Some larvae bore into and enter small roots while others eat the outside root tissue leaving only the central vascular tissue. Larvae can be found down to five inches deep.

Pupation takes place in dichondra sod usually where the last instar larva ended up feeding on roots. Pupation takes five days to the white adult. It takes about a day for the adult to darken to its normal dark color.

The entire life cycle ranges from 32 to 35 days depending upon temperature and moisture conditions of the dichondra sod. The dichondra flea beetle overwinters as an adult in dichondra and becomes an active feeder during warm winter days in southern California.

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